MR-compatible LED light

User Manual

1. Intended use

The LED light is intended to be used in combination with our MR compatible video cameras for different illumination purposes like face monitoring or eye-tracking. It emits diffuse light.

The LED light can be used inside an MRI scanner without perturbing artifacts even in fMRI. The device uses a single light-emitting-diode (LED) in a compact titanium housing.

The device does not have an alert in case of a breakdown. Thus, it should not be used to observe vital functions without other measures.

2. Description

The light source is composed of an LED in a titanium housing, a connection cable (see figure 1), and a control and filter box (see figure 2). It can be equipped with different types of LEDs. Thus, it is possible to provide both, visible or infrared light.

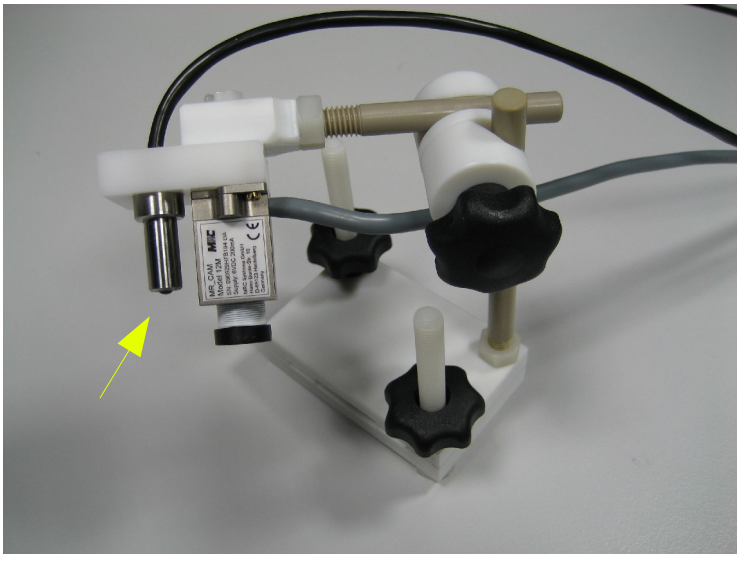


Figure 1:

The photograph shows the LED light (arrow) mounted together with MRC's MR-compatible camera “12M”.

The powering is arranged via the filter box. The LED is connected to the filter box with a shielded cable that includes the power and the signal lines.

3. Installation of the filter box

The filter box should be mounted to the filter panel of the MR cabinet. It must be located outside the MR cabinet. The cable to the LED must be guided into the MR cabinet through a hole.

For permanent installation the filter box should be screwed onto the panel board by means of the feed-through **LED connector**.

- A 10 mm through-hole is required in the filter panel.
- The LED connector is guided through this hole.
- The connector serves also as a connection to the shielding (ground) of the MR cabinet.

For temporary use, the LED cable can be brought into the MR cabinet by other means, e.g. through a service entry hole. In this case, an additional grounding cable should be used to connect the LED box connector to the shield panel grounding.

4. Operation

The intensity can be adjusted by means of a potentiometer at the filter box.

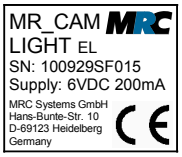
Figure 2:

Control and filter box. In front the potentiometer for the intensity adjustment can be seen. Besides the potentiometer is a LED which shines when the device is powered.

The connector for the power supply is on the left side.

The **feed-through LED connector** for the connection of the LED cable is on the back side. The connector should be used to screw the box to the filter panel.

5. Labelling



Power consumption: max. 200 mA / 6V

6. Notes for safety and operation

- Whenever metallic parts are used in an MRI scanner there is a residual risk of an electric discharge from this part to the human body. Therefore we strongly advice not to place the LED closer to the subject or the user than 10 cm.
- The risk of an electric discharge can be further reduced if the connection cable is guided on a direct way (without loops and without crossing the middle axis) out of the bore.
- Even during a temporary use of the LED light source (when the LED connection cable is guided through a service entry hole or a waveguide) please take care that
  - (1) the filter box is grounded on the MR shield. The earth ground cable must have a good contact
  - (2) the LED connection cable does not protrude from the MR cabinet / waveguide. Otherwise the cable can cause interference.
- Light-emitting diodes (LEDs) are subject to an aging process which is accelerated if the LEDs are driven at highest powers. In order to increase the lifetime of the product we recommend not to drive the light source with highest intensity and to diconnect it from mains whenever it is not in use.
- The LED light source is not specially protected against splash water. It should only be used in dry environments. If moisture is entrapped into the housing a short circuit can occur leading to a damage of the electronics.
- Please do not use any other power supply than the medical one included in delivery.

6. Contact

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